UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK

In re: Methyl Tertiary Butyl Ether ("MTBE") Products Liability Litigation **This document pertains to:** *City of New York v. Amerada Hess Corp. et al.*, Case No. NY-04-CV-03417	Master File No. 1:00-1898 MDL 1358 (SAS) M21-88

MEMORANDUM OF LAW IN SUPPORT OF EXXON MOBIL CORPORATION'S MOTION TO EXCLUDE OPINIONS OF PLAINTIFF'S EXPERT DAVID TERRY

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PRELIMINARY STATEMENT

Plaintiff's putative expert, David Terry, relies on two computer simulations to predict MTBE detections at the Station 6 wells 10, 20, even 30 years in the future. To be clear, we are not challenging the computer modeling programs (MT3D and ATRANS) themselves – both programs are often used by hydrogeologists. But all computer models are vulnerable to the "garbage in, garbage out" problem. *Sorensen v. Lower Niobrara Natural Resources Dist.*, 376 N.W.2d 539, 544 (Neb. 1985) (groundwater "model involves complicated computations vulnerable to 'garbage in, garbage out,' that is, computer computations were only as good as the validity of data supplied").

And that is Terry's problem here. The data he has selectively chosen for the models is without any evidentiary or scientific basis; contradicts other known data; or simply is made up. Terry's simulations and resultant predictions about future MTBE detections at Station 6 do not come close to meeting the reliability requirements of *Daubert*.

SUMMARY OF ARGUMENT

"A computer model is valid only insofar as it enables us to make valid inferences about the real-world system being simulated." *Perma Research & Dev. v. Singer Co.*, 542 F.2d 111, 122 (2d Cir. 1976). But a simulation that is being used to predict the **future** – as each of Terry's purports to do here – also should be able to "predict" the **past**. *Kargo Global, Inc. v. Advance Magazine Publishers*, 2007 U.S. Dist. LEXIS 57320, at *20 (S.D.N.Y. Aug. 6, 2007) ("Survey's failure to approximate real world conditions severely limits its probative value … and can provide grounds for exclusion."). Indeed, this basic concept is known as "validation" – the process of determining how well a groundwater flow or contaminant transport model describes or predicts actual behavior of the environmental system by comparing its output to what was

historically observed in "the real-world system being simulated." It is axiomatic that a simulation which cannot replicate known conditions "in the real-world" cannot be considered reliable to predict future, unknown conditions.

But that is precisely the problem with Terry's simulations here. When past data from the "real-world system being simulated" is put into Terry's models[1] – actual, known data from the years 2004-2008 – the results generated do **not** reflect (even remotely) what was observed in that "real-world system" during those same years. In fact, the discrepancy (or error rate) is anywhere from **44% to more than 10,000%.** In short: the unreliability of Terry's simulations is proven – ironically enough – by the very simulations themselves.

The fact that these simulations have not been (and cannot be) validated is enough to establish their unreliability and exclude them under *Daubert*. Why we see such enormous error rates – and why Terry's simulations should be precluded here – only becomes more apparent when Terry's use of the underlying models is examined in closer detail.

Terry's first model (Analysis 1, MT3D Program) predicts future MTBE at Station 6 based on his modeling of the supposed amount of MTBE that exists in the Aquifer beneath Queens. But to come up with this amount Terry did not use the hundreds of actual, "real-world" sampling results available to him. He did not, for example, use any generally accepted scientific method to average the actual, reported MTBE detections to develop a "representative" amount of MTBE in the Aquifer. Instead, he randomly selected sites from the 50 square miles that comprise Queens – his model domain; chose one data point from each site – the highest MTBE reading, predictably – and, from these single data points, literally **hand-drew** a massive MTBE

[1] Although we will use the words "simulation" and "model" interchangeably to refer to what Terry has done with the MT3D and ATRANS programs here, we emphasize (again) that we are not challenging the computer programs themselves.

plume beneath Queens. In some cases, Terry has depicted an MTBE plume that extends for nearly a mile with **no** data to confirm that there actually is any MTBE in the groundwater. Terry ultimately uses his hand-drawn plume map as the basis for the amount of MTBE input into his Analysis 1 model.

Terry's second model (Analysis 2, ATRANS Program) is even more speculative, if that is possible. For this model, Terry purports to simulate MTBE releases from 55 service station sites in Queens. For all but six of these stations, Terry admits he has no evidence about whether an MTBE release actually occurred or, if one did, when it occurred or in what amount.[2] So what does Terry do for the remaining 49 sites? He speculates that a massive, 2,000 gallon release occurred at virtually all of them – essentially dumping 85,000 gallons of gasoline into the Aquifer beneath Queens without a shred of supporting evidence. Terry's approach and conclusions do not meet the most basic requirements for admissibility at trial, let alone the more stringent requirements imposed by *Daubert* for expert testimony.

* * *

In the end, it is not hard to understand how Terry's models get to an error rate as high as 10,000%. Without meaning to disparage Terry, this is the "garbage in, garbage out" problem writ large. The fact that Terry cherry-picked sampling results, and manufactured his own "releases" where the proof was lacking, all but guaranteed the skewed (and wildly inaccurate)

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[2] In his Rebuttal Report, Terry identifies and simulates 55 releases in Analysis 2. Terry only has information on the volume reportedly spilled for 6 of the 55 releases simulated. The remaining 49 are simulated as hypothetical spill volumes. *See Declaration of Lisa Gerson in Support of Defendant Exxon Mobil Corporation's Motion To Exclude Opinions of Plaintiff's Expert David Terry* ("Gerson Decl."), Ex. A (*Expert Rebuttal Report of David B. Terry, P.G.*, Mar. 23, 2009), at tbl. 2.

results that are seen in his Analysis 1 and Analysis 2 simulations. Neither simulation is reliable or valid. Neither should be permitted at trial.

LAW

It is the responsibility of "the trial judge to ensure that any and all scientific testimony or evidence admitted is not only relevant, but reliable." *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579, 589 (1993); *see also Colon v. BIC USA, Inc.*, 199 F. Supp. 2d 53, 69 (S.D.N.Y. 2001) (Scheindlin, J.). The fundamental concept of "reliability" is reflected in Federal Rule of Evidence 702:

> If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise, if (1) the testimony is based upon sufficient facts or data, (2) the testimony is the product of reliable principles and methods, and (3) the witness has applied the principles and methods reliably to the facts of the case.

FED. R. EVID. 702.

The Supreme Court has identified four non-exclusive criteria for assessing the reliability of a putative expert's methodology: (1) whether the expert's theory or technique is capable of being, and has been, tested; (2) whether the theory or technique has been subjected to peer review and publication; (3) the known or potential rate of error and existence and maintenance of standards controlling the technique's operation; and (4) whether the theory or technique is generally accepted by the scientific community. *See Santoro ex rel. Santoro v. Donnelly*, 340 F. Supp. 2d 464, 472-73 (S.D.N.Y. 2004) (Scheindlin, J.) (citing *Daubert*, 509 U.S. at 593); *Colon*, 199 F. Supp. 2d at 69. Expert opinion testimony should be excluded where a methodological "flaw is large enough that the expert lacks 'good grounds' for his or her conclusions." *Amorgianos v. AMTRAK*, 303 F.3d 256, 267 (2d Cir. 2002); *see also Renaud v. Martin Marietta*

Corp., 749 F. Supp. 1545, 1552 (D. Colo. 1990) (Weinshienk, J.) (expert's use of single data point to draw scientific conclusions is a flaw that "does not raise the factual question of what weight an opinion should be given but instead raises the legal issue of whether any weight whatsoever may be accorded the opinion."), *aff'd* 972 F.2d 304 (10th Cir. 1992)[3].

Also relevant to a determination of reliability is an assessment of the **data** relied on by an expert and/or the **conclusions** reached from that data. Indeed, the Supreme Court has recognized that "conclusions and methodology are not entirely distinct from one another" and that "[a] court may conclude that there is simply too great an analytical gap between the data and the opinion proffered." *General Elec. Co. v. Joiner,* 522 U.S. 136, 146 (1997) (emphasis added). Following the Supreme Court's decision in *Joiner*, the Second Circuit held that "when an expert opinion is based on data, a methodology, or studies that are simply inadequate to support the conclusions reached, *Daubert* and Rule 702 mandate the exclusion of that unreliable opinion testimony." *Amorgianos*, 303 F.3d at 266. In *Amorgianos*, the Second Circuit referred approvingly to a Third Circuit decision holding that a "district court must examine the expert's conclusions in order to determine whether they could reliably follow from the facts known to the expert and the methodology used." *Heller v. Shaw Indus., Inc.*, 167 F.3d 146, 153 (3d Cir. 1999). The Second Circuit went on to explain that to warrant admissibility:

> It is critical that an expert's analysis be reliable at every step. … *[A]ny* step that renders the analysis unreliable under the *Daubert factors renders the expert's testimony inadmissible.* … In deciding whether the step in an expert's analysis is unreliable, the district court should undertake a **rigorous examination of the facts on which the expert relies** ….

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[3] Judge Weinshienk followed the advice of her court-retained expert on hydrogeology and geochemistry that reliance on a single data point was unscientific and unreliable. *Renaud*, 749 F. Supp. at 1553.

Amorgianos, 303 F.3d at 267 (italics in original; bold emphasis added) (internal citations and quotations omitted); *see also Allgood v. Gen. Motors Corp.*, 2006 U.S. Dist LEXIS 70764, at *34-*35 (S.D. Ind. Sept. 18, 2006) ("sample choice, the selection of datapoints on which to determine risk in this case, **is an issue of methodology**"); *U.S. Info. Sys. v. IBEW Local Union No. 3*, 313 F. Supp. 2d 213, 233, 239 (S.D.N.Y. 2004) (precluding expert from testifying as to any conclusions based on skewed data and stating, "the reliability of any analysis depends upon an unbiased selection of sample data."). In short: the unreliability of an expert's methodology may be clear not just from the methodology itself, but from the facts and data relied on by the expert.

The need for a reliable basis in fact is particularly crucial in the context of computer modeling, because "[a] computer model is valid only insofar as it enables us to make valid inferences about the real-world system being simulated," *Perma Research & Dev. v. Singer Co.*, 542 F.2d 111, 122 (2d Cir. 1976), and all computer-generated evidence is vulnerable to the so-called "garbage in, garbage out" phenomenon—that is, the results are only as good or valid as the inputs. *See Coffee v. Dowley Mfg.*, 187 F. Supp. 2d 958, 974 (D. Tenn. 2002); *see also Wichita v. Trs. of Apco Oil Corp. Liquidating Trust*, 306 F. Supp. 2d 1040, 1108 (D. Kan. 2003) ("even in the best circumstances, a model is only an estimate and the accuracy of the estimate depends to a considerable extent on the data selected for use in the computer model , the quality of that data, and, of course, the skill of the modeler."); *Sorensen v. Lower Niobrara Natural Resources Dist.*, 376 N.W.2d 539, 544 (Neb. 1985) (groundwater "model involves complicated computations vulnerable to 'garbage in, garbage out,' that is, computer computations were only as good as the validity of data supplied"). Indeed, the Second Circuit has held that expert opinion based on a methodology that fails to simulate real world conditions may warrant

exclusion. *See Amer. Footwear Corp. v. Gen. Footwear Co. Ltd.*, 609 F.2d 655, 660 (2d Cir. 1979) ("the critical defect in this survey was the failure to conduct it under actual marketing conditions"); *Kargo Global, Inc. v. Advance Magazine Publishers*, 2007 U.S. Dist. LEXIS 57320, at *20 (S.D.N.Y. Aug. 6, 2007) ("Survey's failure to approximate real world conditions severely limits its probative value … and can provide grounds for [its] exclusion.").

Finally, in addition to meeting the strictures of Rules 702 and 703, expert testimony is "subject, of course, to Rule 403's more general prohibition against evidence that is less probative than prejudicial or confusing." *Schering Corp. v. Pfizer Inc.*, 189 F.3d 218, 228 (2d Cir. 1999). An expert's methodology may be "so flawed as to be completely unhelpful to the trier of fact," and "the **cumulative effect of the methodological flaws** [may] so diminish[] the reliability and probative value [of the evidence] that its exclusion is warranted under *Rules 403* and *702*." *Louis Vuitton Malletier v. Dooney & Bourke, Inc.*, 525 F. Supp. 2d 558, 562-63, 574 (S.D.N.Y. 2007) (internal quotations and citations omitted) (emphasis added); *see also Renaud*, 749 F. Supp. at 1552 (use of single data point constitute flaw implicating legal issue of whether "any weight whatsoever may be accorded [expert's] opinion"); FED. R. EVID. 403. The risks of confusion and misleading the jury that are balanced under Rule 403 are particularly implicated by expert testimony that gives a "false aura of scientific infallibility." *See In re Agent Orange Prod. Liab. Litig.*, 611 F. Supp. 1267, 1283 (E.D.N.Y. 1985) (excluding expert testimony under Rule 403 where "[t]he unfounded assumptions and speculation underlying [the expert's] testimony reduce[d] its probative value to a point approaching zero.").

ARGUMENT

I. TERRY'S SIMULATIONS ARE NEITHER VALID NOR RELIABLE BECAUSE THEY DO NOT PREDICT "REAL WORLD CONDITIONS" AND HAVE AN UNACCEPTABLE "ERROR RATE."

Mr. Terry relies on a model known as MT3D to simulate the transport of MTBE in the aquifer beneath Queens, and to predict future concentrations of MTBE in the Station 6 wells. We will quickly summarize what Terry does know about his simulation using the MT3D model.

Terry admits that there is no known or generally accepted error rate for simulations using the MT3D model. *See Gerson Decl.*, Ex. B (*Deposition of David B. Terry*, July 1, 2009) at 791:13-20; 802:7-14. Terry also admits that he did not calculate a confidence interval or any other statistical measure of the accuracy of his predictions about future concentrations of MTBE in the Station 6 wells. *Id.* at 796:22-797:7 (Analysis 1); 790:15-791:12 (Analysis 2). Indeed, Terry admits that the amount of MTBE in groundwater is "unknown" (*id.* at 794:6-12) and, therefore, that it is not possible for him to quantify the accuracy or precision of his predictions about future MTBE impacts on Station 6. *Id.* at 800:14-801:13 (Analysis 1); 793:10-794:12 (Analysis 2). In short: Terry admits that his simulations cannot predict with any reasonable degree of scientific certainty, or any reasonable certainty at all, the quantity of MTBE that will be present in the Station 6 wells in the future, if any MTBE is present at all.

Terry's doubt about his own simulations apparently is well-placed. Why? Because when the simulations are run using data from the past – facts that are part of the record in this case – they **fail** to generate the results that were actually observed. Actual MTBE testing data exists for the time period 2004-2008, not just for the Station 6 wells but for the aquifer beneath Queens. If Terry's simulations actually work, we should be able to enter the aquifer data into the simulations and generate the MTBE levels that were actually observed in the Station 6 wells (and

nearby USGS wells) during this time period. But when we did this, what we observed was not an analytical gap – it was an analytical "chasm":

Well[4]	**MTBE Level *Predicted* By Terry's Analysis 1** (ppb)	**MTBE Level *Predicted* by Terry's Analysis 2** (ppb)	**MTBE Level *Actually* Measured in the Well** (ppb)	**Range in Error (Multiplier of Measured Concentration)**[5]
Well 6	27.13	48.41	0.78	33.8 to 61.1 Times
Well 6D	53.11	70.59	126	0.57 to 0.44 Times
Well 33	413.37	412.42	<0.22	>1,878 to >1,874 Times
Q 3165	624.7	128.15	0.1	6,246 to 1,281 Times
Q 3629	96.1	0	0.6	159 to 1 Times
Q 3988	64.0	336.39	0.5	127 to 671 Times

"A computer model is valid only insofar as it enables us to make valid inferences about the real-world system being simulated." *See Perma Research & Dev. v. Singer Co.*, 542 F.2d 111, 122 (2d Cir. 1976). Terry himself stated at his deposition that "any model is a *[sic]* approximation of reality." *Gerson Decl.*, Ex. B at 802:23-24. Certainly, a computer simulation that is being proffered as accurate and reliable for purposes of predicting MTBE concentrations in wells 10, 20, even 30 years in the future should be able to accurately and reliably predict – or

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[4] The simulated and measured values are from data shown on the attached Tables 6 and 7 that set forth the calibration statistics for Terry's model. The simulated results were generated by running Terry's model without any revisions. The locations of the USGS wells – those with the "Q" prefix – are shown on Figure 12 in relation to the station 6 wells.

[5] The Range in Error is calculated by subtracting the measured concentration from the predicted concentration and dividing by the measured concentration. The Range in Error can be converted to a percent error by multiplying the individual range numbers by 100. For example, the 33.8 to 61.1 times error between the measured and predicted MTBE concentration for Well 6, translates to a 3,380 % to 6,110 % error.

at least approximate – the MTBE concentrations that were **actually** observed in those same wells just a few months or years ago. But Terry's simulations do not even come close—the ranges or error are, to say the least, extraordinary. *Kargo Global, Inc. v. Advance Magazine Publishers*, 2007 U.S. Dist. LEXIS 57320, at *20 (S.D.N.Y. Aug. 6, 2007) ("Survey's failure to approximate real world conditions severely limits its probative value … and can provide grounds for [its] exclusion."); *see also Amer. Footwear Corp. v. Gen. Footwear Co. Ltd.*, 609 F.2d 655, 660 (2d Cir. 1979) ("the critical defect in this survey was the failure to conduct it under actual marketing conditions"). Putting aside the fundamental requirements of FRCP 702 and *Daubert*, simple common sense holds that a computer model which cannot, from known data, accurately (or even remotely) predict "the real-world system being simulated" – a model with a provable error rate of more than 10,000% – is not valid or reliable for any purpose, let alone for predicting the future 10, 20 or 30 years from today.

In short: the unreliability of Terry's simulations is proven by the very simulations themselves. Because these simulations cannot predict events known to have occurred in the past, they cannot be deemed valid or reliable to predict the future. Accordingly, the simulations – and all of Terry's proposed opinions and testimony from them – should be excluded under FRCP 702 and *Daubert*.[6]

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[6] Although we hope our argument already is clear, we end it with this analogy to further illustrate how Terry's simulations are flawed. Suppose we proffered a computer simulation that, we said, could predict who would win the Super Bowl for the next 30 years. Now suppose that when we put actual, past data into the computer simulation, it predicted that the Detroit Lions won the Super Bowl in 2004, 2005, 2006, 2007 and 2008. The Detroit Lions have never won (or even qualified for) the Super Bowl, and their last NFL Championship was in 1957.

This is, in effect, Terry's computer simulations here.

II. TERRY'S DATA SELECTION WAS FLAWED AND BIASED.

Exactly **why** Terry's computer simulations have error rates as high as 10,000% becomes clear when one examines the underlying data relied on by Terry for those simulations. All computer-generated evidence is vulnerable to the so-called "garbage in, garbage out" phenomenon – that is, the results are only as good or valid as the inputs. *See Coffee v. Dowley Mfg.*, 187 F. Supp. 2d 958, 974 (D. Tenn. 2002); *see also Wichita v. Trs. of Apco Oil Corp. Liquidating Trust*, 306 F. Supp. 2d 1040, 1108 (D. Kan. 2003) ("even in the best circumstances, a model is only an estimate and the accuracy of the estimate depends to a considerable extent on the data selected for use in the computer model, the quality of that data, and, of course, the skill of the modeler."). If the data that is put into a model is unreliable, then the results will be unreliable – and inadmissible under *Daubert*. *See, e.g., Amorgianos v. AMTRAK*, 303 F.3d 256, 267 (2d Cir. 2002) ("[A]ny step that renders the analysis unreliable under the *Daubert* factors renders the expert's testimony inadmissible."). In this case, Terry's methodology is so riddled with flawed, biased data selection and highly speculative inputs that the inaccuracy of his conclusions is hardly surprising. More to the point, Terry's flawed and biased data selection goes directly to the reliability of the outputs on which he bases his opinion.

A. Mr. Terry's Analysis 1 Is Based On Unsound Scientific Practice Because It Relies On Only A Single Data Point From Each Service Station.

Where an expert relies on a single data point to draw scientific conclusions it "raises the **legal issue** of whether any weight whatsoever may be accorded the opinion." *Renaud v. Martin Marietta Corp.*, 749 F. Supp. 1545, 1552 (D. Colo. 1990) (emphasis added), *aff'd* 972 F.2d 304 (10th Cir. 1992). That is because removal of that single data point leaves the expert with "no basis on which to reach any conclusion other than that [the ultimate conclusion] was **possible**." *See id.* (emphasis added); *see also Boucher v. U.S. Suzuki Motor Corp.*, 73 F.3d 18, 21 (2d Cir.

1996) ("expert testimony should be excluded if it is speculative or conjectural"). Mr. Terry's Analysis 1 relies on only a single water quality data point from each service station or USGS location he selected for this particular simulation and, therefore, has no reliable basis for extrapolating MTBE contamination across the great distances depicted in his report.

In Analysis 1, Mr. Terry claims to use "available water quality information" to develop a "contour map … intended to represent a 'snapshot' of water quality conditions in the aquifer system during 2004." *Gerson Decl.*, Ex. C (*2nd Errata to Feb. 6, 2008 Expert Report of David B. Terry, P.G.*, Apr. 20, 2009), at 5-6; *see also id.* at fig. 3 (purporting to depict "plumes" of MTBE contamination). But Terry did not use data from every service station site or every USGS well to prepare this "snapshot." Rather, Terry engaged in "selection bias," carefully picking only the data that would maximize the amount of MTBE assumed to be in the aquifer in 2004 – and thus his predicted future impacts at the Station 6 wells. How? Rather than rely on the copious testing data available to him,[7] Terry relied on only a **single data point** from each service station or USGS monitoring location. *See id.* at 6. But not just any single data point. Terry picked only the **highest** data point – the one with highest level of MTBE. *Id.* ("Maximum concentration data for the period of interest were used from each spill site location"); *see also Gerson Decl.*, Ex. D (*Deposition of David B. Terry*, Apr. 6, 2009), at 286:14-23 (did not look at additional monitoring well data for service station sites), 312:12-20 ("These [contours of contamination in the aquifer at each service station site] are based on a single point.").

Were these the only data points available to Terry, his approach might be defensible. But they were not – much more data was available. Terry had the site remediation files and/or Toxic

[7] In addition to thousands of pages of site remediation files produced by the defendants in this case, Mr. Terry also had available to him the Malcolm Pirnie NYCDEP Database and the NYCDEP Dependability Joint Venture Database. *See Gerson Decl.*, Ex. C at tbl. 2.

Targeting reports for each of these service station sites. A quick review of the environmental files for these sites clearly shows that the MTBE concentrations selected by Terry are **not** remotely representative of MTBE levels actually observed at these sites. For example, the environmental report for the BP station at 165-25 Liberty Avenue, a potential source for MTBE at Station 6, indicates the following:

- The maximum MTBE value in 2004 was 227 ppb – this is the value Terry uses;
- Fourteen other wells on the site also were sampled in 2004, and **all** had MTBE below the Method Detection Limit for the test.

Gerson Decl., Ex. E (*Delta Consultants Groundwater Monitoring Report for 165-25 Liberty Ave.*, Aug. 26, 2008 (BPCITYNY0000279). Likewise, for the BP Station at 113-40 Merrick Boulevard, Terry selects a value of 65,900 ppb for his computer simulation – a sampling result from March 2004. But the environmental reports for this station also show that:

- Nine (9) other wells were sampled in March 2004;
- The average MTBE in those nine wells was 1,758 ppb, not 65,900 ppb.

Gerson Decl., Ex. F (*Delta Environmental Consultants Subsufrace Hydrocarbon Assessment Report for BP Service Station Number 4318*, Apr. 15, 2004 (BPII 000361573, 000361583-84)).

The selection of a single data point to represent a site where many other wells reported much lower concentrations of MTBE is **not** a generally accepted practice because (besides being biased) such a selection obviously fails to accurately represent site conditions. *See, e.g.*, *Allgood v. Gen. Motors Corp.*, 2006 U.S. Dist LEXIS 70764, at *47-*48 (S.D. Ind. 2006) (in action by landowners to recover for contamination, expert's opinion deemed not reliable because it was "based on results obtained from the collection of a single data point on each parcel"); *Renaud*, 749 F. Supp. at 1553. In *Renaud*, the court expressed concern about drawing conclusions from a single data point: "Simply put, no one has any idea of whether this sample is representative of

'normal' contaminants concentration." *Renaud*, 749 F. Supp. at 1553. In fact, the court's own appointed expert made clear that it is "unsound scientific practice to select one concentration measured at a single location and point in time and apply it to describe continuous releases of contaminants over an 11-year period." *Id.*

That, however, is the precisely the flawed methodology that Terry utilized here. For each service station he selected a single MTBE measurement, from a single well, from a single point in time, and then he used that data point to represent conditions at that service station over a period of many years. And Terry did this despite having many other samples (albeit lower ones) from other wells at the same sites for the same time period; and despite having years of other testing data available to him for those same wells. Terry's selections were not "normal," they were biased and flawed.

Compounding this already serious flaw is the fact that the single measurement Terry selected from each station served as his basis for extrapolating the extent and concentration of an MTBE "plume" in the station's immediate vicinity and far beyond. *See Gerson Decl.*, Ex. C at 6, fig. 3. An "expert must have some reliable basis for extrapolating from the available data." *Johnson Elect. N. Am. Inc. v. Mabuchi Motor Am. Corp.*, 103 F. Supp. 2d 268, 283 (S.D.N.Y. 2000). Terry has no such basis here. In fact, Terry admits that he (1) drew the "plumes" manually without the aid of computer projections (*Gerson Decl.*, Ex. D at 291:15-16, 295:4-11); (2) using "only the data that's shown on [fig. 3]" (*id.* at 292:17-18); (3) without field data to confirm the presence of MTBE at any location other than the "one data point" (*id.* at 293:7-22); and (4) without any other data in proximity to the single data point to demonstrate the presence of MTBE in the groundwater. *Id.* at 295:9-19. The result is that Mr. Terry has – from a single data point, at a single well, at a single station, at a single point in time – depicted plumes that